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EXAMINER	
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ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,875	SAKAI ET AL.	
	Examiner	Art Unit	
	PHYOWAI LIN	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-18 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-18 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 19 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 03/19/2004.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The references listed in the Information Disclosure Statement filed on March 19,2004 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. **Claims 3 and 7** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. **Claim 3** requires that when wavelength increases, wavelength-dependent loss decreases also when the wavelength increases, wavelength-dependent loss increases too. This is contradictory and therefore it is unclear. The claim should be interpreted as best understood.

6. **Claim 7** requires that when wavelength increases, wavelength-dependent loss decreases also when the wavelength increases, wavelength-dependent loss increases too. This is contradictory and therefore it is unclear. The claim should be interpreted as best understood.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 13-16** are rejected under 35 U.S.C. 102(b) as being anticipated by Kai et al. (US Patent Number 6462844).

Regarding to claim 13, Kai et al. discloses a wavelength multiplexing coupler (optical coupler 24-see column 10,line 61 and FIG.1) for performing wavelength multiplexing, comprising:

a plurality of input ports through which light having a plurality of different wavelengths is received (see column 10,lines 56-57 and FIG.1);

a multiplexing unit (optical coupler 24-see column 10,line 61 and FIG.1) which has losses corresponding to said plurality of different wavelengths of said light received through said plurality of input ports, and multiplexes the light received through the plurality of input ports (see column 10, lines 61-62;column 11, lines 66 through column 12, lines 1-7 and FIG.1); and

an output port through which the light multiplexed by said multiplexing unit is outputted onto an optical transmission line (see column 10, lines 61-64 and FIG.1).

Regarding to claim 14, Kai et al. discloses everything claimed as applied above (see claim 13). In addition, the wavelength multiplexing coupler includes:

wherein said optical transmission line (SMF 4-see column 12,line 5) has a wavelength-dependent loss characteristic, and said losses which the multiplexing unit has correspond to the wavelength-dependent loss characteristic of the optical transmission line (see column 11, line 66 through column 12, lines 1-7 and FIG.1).

Regarding to claim 15, Kai et al. discloses a wavelength demultiplexing coupler (an optical coupler 31-see column 11, line 5) for performing wavelength demultiplexing, includes:

an input port through which wavelength-multiplexed light is received from an optical transmission line, where light having a plurality of different wavelengths is multiplexed in the wavelength-multiplexed signal (see column 10, lines 61-64; column 11, lines 1-7 and FIG.1 where in the wavelength-multiplexed light is transmitted by multiplexer through the transmission line and at the end received by demultiplexer for demultiplexing the multiplexed signal);

a demultiplexing unit which has losses corresponding to said plurality of different wavelengths of said wavelength-multiplexed light received through the input port, and demultiplexes the wavelength-multiplexed light received through the input port, into demultiplexed light (see column 11, lines 4-7; column 15, lines 15-20,FIG.1 and FIG.15 where in demultiplexing device has the function of loss

compensating from transmission line and additionally demultiplex the multiplexed signal); and

a plurality of output ports through which said demultiplexed light is outputted (see FIG1 optical receiving apparatus where in the demultiplexed light is output by lot of output ports).

Regarding to claim 16, Kai et al. disclose the wavelength demultiplexing coupler (an optical coupler 31-see column 11, line 5) wherein said optical transmission line has a wavelength-dependent loss characteristic, and said losses which the demultiplexing unit has correspond to the wavelength-dependent loss characteristic of said optical transmission line (see column 11, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerstel (US Patent Number 7099578) in view of Kai et al. (US Patent Number 6462844).

Regarding to claim 1, Gerstel discloses an optical transmission device (FIG.3) for performing transmission of an optical signal, comprising:

a WDM port as a port for transmission and reception of a wavelength-multiplexed signal (column 11,lines 41-48 and FIG.3 where in the MUX/DEMUX 34 does the function of transmitting and receiving of WDM signal through out WDM device) ; and

Even though Gerstel discloses the function of MUX/DEMUX for transmitting and receiving through the transmission line, he fails to specifically disclose the function of compensation loss for wavelength-dependent loss of transmission line.

Kai et al. discloses a wavelength multiplex/demultiplex unit which has a loss characteristic compensating for a wavelength-dependent loss characteristic of an optical transmission line (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 where in optical device has multiplex and demultiplex which can compensate for wavelength-dependent loss of transmission line by using optical equalizing filter EQ.)

performs at least one of wavelength demultiplexing of a signal received through said WDM port (column 11, lines 4-9 and FIG.1) and

wavelength multiplexing for outputting a signal through the WDM port (see column 10, lines 61-64 and FIG.1), and

suppresses differences among different channels in loss caused by transmission of a wavelength-multiplexed signal so as to equalize loss levels in the different channels in the wavelength-multiplexed signal (column 11,lines 66 through column 12, lines 1-7 and FIG.1 where in optical equalizer EQ reduces the loss of wavelength-multiplexed signal in each channel and balance the loss.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for more reliable communication and better long-distance transmission.

11. **Claims 2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerstel (US Patent Number 7099578) in view of Kai et al. (US Patent Number 6462844) as applied to claim1 above, and further in view of Kubo (US Patent Number 6671430).

Regarding to claim 2, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 1). However, they fail to disclose the multiplex/demultiplex has optical filter and its function.

Kubo discloses that the optical transmission device (optical device-see column5, line 62 and FIG.2), wherein said wavelength multiplex/demultiplex unit (an optical multiplexer and demultiplexer-see column5, line 63-64) includes:

a plurality of optical filters (a plurality of bandpass filters-see column 6, line 5 and FIG.2), which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with said wavelength-dependent loss characteristic, and each of the plurality of optical filters has a function of a band-pass filter and an identical insertion loss (see column 6, lines 5-23 where in lots of filter are connected in cascaded way and each bandpass filter has it own wavelength-dependent loss system based on coupling function from input to output port of filter. Additionally, the filters' function is based on bandpass system and also has their own insertion losses.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by using bandpass filter in transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

Regarding to claim 3, Gerstel and Kai et al. and Kubo disclose everything claimed as applied above (see claim 2). In addition, Kubo discloses that wherein when said wavelength-dependent loss characteristic shows decrease in loss with increase in wavelength in a first wavelength range (see column 4, lines 44-48 and column 4, lines 51-55 where in when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3) and

increase in loss with increase in wavelength in a second wavelength range (see column 4, lines 44-51 where in when bandpass filter is coupled by bunch of wavelengths has more loss in port 1 and 2),

said plurality of optical filters are arranged in such a manner that signals to be demultiplexed first pass through ones of said plurality of optical filters corresponding to wavelengths in one of said first and second wavelength ranges in decreasing order of said wavelength-dependent loss characteristic (column 5, line 62 through column 6,line4; column 4,lines 44-48;column 4,lines 51-55 where in lots of optical filter can used as an optical demultiplexer and when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3) and then through

other ones of said plurality of optical filters corresponding to wavelengths in another of said first and second wavelength ranges in decreasing order of said wavelength-dependent loss characteristic (column 4,lines 44-48;column 4,lines 51-55 where in when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by using bandpass filter in transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

Regarding to claim 4, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 1). However, they fail to disclose the multiplex/demultiplex has optical filter and its function.

Kubo discloses that wherein said wavelength multiplex/demultiplex unit (an optical multiplexer and demultiplexer-see column5, line 63-64) further comprises an optical filter (bandpass filter-see column6, line 5) through which separation or insertion of a signal for maintenance control is performed (see column 5,lines 62 through column 6 lines 1-23 where in the optical filter can use as both multiplexer and demultiplexer's function and it includes the separation and insertion loss characteristic between lots of bandpass filters.)

Therefore it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by adding up the optical filter into transmission system for reducing transmission error because it would allow to contribute to the improvement in transmission quality between optical transmission device and optical filter.

12. **Claim 5,9-12,17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerstel (US Patent Number 7099578) in view of Kai et al. (US Patent Number 6462844).

Regarding to claim 5, Gerstel discloses an optical transmission system (FIG.3) for performing transmission of an optical signal, includes:

an optical transmission line (the transmission link L4-see column 11, line 44) as a transmission medium of a wavelength-multiplexed signal (see column 11, lines 41-44);

a first optical transmission device (see FIG.3 node 1') being connected to an end of said optical transmission line (the transmission link L4-see column 11, line 44), and comprising a first wavelength multiplex/demultiplex unit (MUX/DEMUX 34-see column 11,line 41) which has a loss characteristic compensating for a wavelength-dependent loss characteristic of the optical transmission line, and performs at least one of wavelength demultiplexing of an optical signal and wavelength multiplexing of optical signals (see column 11,line 41-48); and

a second optical transmission device (see FIG.3 node 2') being connected to another end of said optical transmission line (the transmission link L4-see column 11, line 44), and comprising a second wavelength multiplex/demultiplex unit (MUX/DEMUX 34'-see column 11,line 49)which has a loss characteristic compensating for said wavelength-dependent loss characteristic of the optical transmission line, and performs at least one of wavelength demultiplexing of an optical signal and wavelength multiplexing of optical signals (see column 11,line 49-56).

Even though Gerstel discloses the function of MUX/DEMUX for transmitting and receiving through the transmission line, he fails to specifically disclose the function of compensation loss for wavelength-dependent loss of transmission line.

Kai et al. discloses a wavelength multiplex/demultiplex unit which has a loss characteristic compensating for a wavelength-dependent loss characteristic of an optical transmission line (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 where in optical device has multiplex and demultiplex which can compensate for wavelength-dependent loss of transmission line by using optical equalizing filter EQ.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for more reliable communication and better long-distance transmission.

Regarding to claim 9, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 5). In addition, they further disclose the optical transmission system (see FIG.3 of Gerstel and FIG.1& FIG.15 of Kai et al.) wherein when said first wavelength multiplex/demultiplex unit performs wavelength multiplexing (see column 11,line 41-48 of Gerstel); and

said second wavelength multiplex/demultiplex unit performs wavelength demultiplexing (see column 11,line 48-56 of Gerstel); and

each of said first and second wavelength multiplex/demultiplex units has a loss characteristic which compensates for half of said wavelength-dependent loss characteristic so that differences among different channels in loss caused by transmission of a wavelength-multiplexed signal are suppressed, and loss levels in the different channels in the wavelength-multiplexed signal are equalized (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 of Kai et al. where in optical device has multiplex and demultiplex which compensate wavelength-dependent loss of transmission line in half and half function by using optical equalizing filter EQ on each side of the optical device.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter on both side of the optical device for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for cost effective as two small equalizing filter are cheaper than one large filter as same result and more reliable communication.

Regarding to claim 10, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 5). In addition, they further disclose the optical transmission system (see FIG.3 of Gerstel and FIG.1& FIG.15 of Kai et al.) wherein when said first wavelength multiplex/demultiplex unit performs wavelength multiplexing (see column 11,line 41-48 of Gerstel) and,

said second wavelength multiplex/demultiplex unit performs wavelength demultiplexing (see column 11,line 48-56 of Gerstel);

said first wavelength multiplex/demultiplex unit has a first loss characteristic which compensates for a first wavelength-dependent loss characteristic of a first section of the optical transmission line between said first optical transmission device and a midpoint of the optical transmission line, and said second wavelength multiplex/demultiplex unit has a second loss characteristic which compensates for a second wavelength-dependent loss characteristic of a second section of the optical transmission line between said midpoint and said second optical transmission device, so that differences among different channels in loss caused by transmission of a wavelength-multiplexed signal are suppressed, and loss levels in the different channels in the wavelength-multiplexed signal are equalized (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 of Kai et al. where in optical device has multiplex and demultiplex which compensate wavelength-dependent loss of transmission line from each end side of multiplex and demultiplex to the middle of transmission line by using optical equalizing filter EQ on each side of the optical device.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter on both side of the optical device for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for cost effective as two small equalizing filter are cheaper than one large filter as same result and more reliable communication.

Regarding to claim 11, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 5). In addition, they further disclose the optical transmission system (see FIG.3 of Gerstel and FIG.1& FIG.15 of Kai et al.) wherein when said first wavelength multiplex/demultiplex unit performs wavelength multiplexing (see column 11,line 41-48 of Gerstel), and

said second wavelength multiplex/demultiplex unit performs wavelength demultiplexing (see column 11,line 48-56 of Gerstel);

said first wavelength multiplex/demultiplex unit has a loss characteristic which compensates for said wavelength-dependent loss characteristic of the optical transmission line, and said second wavelength multiplex/demultiplex unit has a flat loss characteristic which shows identical loss levels at all wavelengths used in transmission, so that differences among different channels in loss caused by transmission of a wavelength-multiplexed signal are suppressed, and loss levels in the different channels in the wavelength-multiplexed signal are equalized (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66

through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 of Kai et al. where in optical device has multiplex and demultiplex which compensate wavelength-dependent loss of transmission line by using optical equalizing filter EQ on each side of the optical device which has function of compensating (flattening) loss).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter on both side of the optical device for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for cost effective as two small equalizing filter are cheaper than one large filter as same result and more reliable communication.

Regarding to claim 12, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 5). In addition, they further disclose the optical transmission system (see FIG.3 of Gerstel and FIG.1& FIG.15 of Kai et al.) wherein when said first wavelength multiplex/demultiplex unit performs wavelength multiplexing (see column 11,line 41-48 of Gerstel), and

said second wavelength multiplex/demultiplex unit performs wavelength demultiplexing (see column 11,line 48-56 of Gerstel);,

said first wavelength multiplex/demultiplex unit has a flat loss characteristic which shows identical loss levels at all wavelengths used in transmission, and said second wavelength multiplex/demultiplex unit has a loss characteristic which compensates for said wavelength-dependent loss

characteristic of the optical transmission line, so that differences among different channels in loss caused by transmission of a wavelength-multiplexed signal are suppressed, and loss levels in the different channels in the wavelength-multiplexed signal are equalized (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG.1 and FIG.15 of Kai et al. where in optical device has multiplex and demultiplex which compensate wavelength-dependent loss of transmission line by using optical equalizing filter EQ on each side of the optical device which has function of compensating (flattening) loss).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter on both side of the optical device for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for cost effective as two small equalizing filter are cheaper than one large filter as same result and more reliable communication.

Regarding to claim 17, Gerstel discloses a wavelength multiplexing-and-demultiplexing coupler(the MUX/DEMUX-see column 11,lines 41 and FIG.3) for multiplexing and demultiplexing wavelengths, comprising:

a first input-and-output port through which light having a plurality of first different wavelengths is received from an optical transmission line(see column 11, lines 45-48 where in the MUX/DEMUX has both input and output port and receive the bunch of different wavelengths from the transmission line), and

light having a plurality of second different wavelengths is outputted onto the optical transmission line (see column 11, lines 41-44 where in the MUX/DEMUX transmits bunch of different wavelength onto the transmission line)

Even though Gerstel discloses the optical transmission device has the transmission system using MUX/DEMUX through transmission line, he fails to disclose the function of covering loss for wavelength-dependent loss of transmission line during the transmission period.

Kai et al. discloses a multiplexing-and-demultiplexing unit which has one of first loss corresponding to said plurality of first different wavelengths (column 11, lines 66 through column 12, lines 1-7 and FIG.1) and second loss corresponding to said plurality of second different wavelengths (see column 15, lines 15-21 and FIG.15),

demultiplexes said plurality of first different wavelengths received through said first input-and-output port, and multiplexes said plurality of second different wavelengths to be outputted through said first input-and-output port; and a plurality of second input-and-output ports through which light to be multiplexed is received, and demultiplexed light is outputted (see column 11,line 5-7 and column 10, lines 61-64).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for more reliable communication and better long-distance transmission.

Regarding to claim 18, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 17). In addition, Kai et al. disclose that the wavelength multiplexing-and-demultiplexing coupler (see FIG.1) wherein said optical transmission line has a wavelength-dependent loss characteristic, and said one of the first loss and the second loss corresponds to the wavelength-dependent loss characteristic of the optical transmission line (see column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-21; FIG.1 and FIG.15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel's invention by using optical equalizing filter for covering up transmitting error caused by during transmission period because this would allow to make the transmission system for more reliable communication and better long-distance transmission.

13. **Claims 6-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerstel (US Patent Number 7099578) in view of Kai et al. (US Patent Number 6462844) as applied to claim 5 above, and further in view of Kubo (US Patent Number 6671430).

Regarding to claim 6, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 5). However, they fail to disclose the multiplex/demultiplex has optical filter and its function.

Kubo discloses that the optical transmission device (optical device-see column5, line 62 and FIG.2), wherein each of said first and second wavelength multiplex/demultiplex units (an optical multiplexer and demultiplexer-see column5, line 63-64) includes:

a plurality of optical filters (a plurality of bandpass filters-see column 6, line 5 and FIG.2), which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with said wavelength-dependent loss characteristic, and each of the plurality of optical filters has a function of a band-pass filter and an identical insertion loss (see column 6, lines 5-23 where in lots of filter are connected in cascaded way and each bandpass filter has it own wavelength-dependent loss system based on coupling function from input to output port of filter. Additionally, the filters' function is based on bandpass system and also has their own insertion losses.)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by using bandpass filter in transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

Regarding to claim 7, Gerstel and Kai et al. and Kubo disclose everything claimed as applied above (see claim 2). In addition, Kubo discloses that wherein when said wavelength-dependent loss characteristic shows decrease in loss with increase in wavelength in a first wavelength range (see column 4, lines 44-48 and column 4, lines 51-55 where in when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3) and

increase in loss with increase in wavelength in a second wavelength range (see column 4, lines 44-51 where in when bandpass filter is coupled by bunch of wavelengths has more loss in port 1 and 2),

said plurality of optical filters are arranged in such a manner that signals to be demultiplexed first pass through ones of said plurality of optical filters corresponding to wavelengths in one of said first and second wavelength ranges in decreasing order of said wavelength-dependent loss characteristic (column 5, line 62 through column 6,line4; column 4,lines 44-48;column 4,lines 51-55 where in lots of optical filter can used as an optical demultiplexer and when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3) and then through

other ones of said plurality of optical filters corresponding to wavelengths in another of said first and second wavelength ranges in decreasing order of said wavelength-dependent loss characteristic (column 4,lines 44-48;column 4,lines 51-55 where in when bandpass filter is coupled by bunch of wavelengths has less loss in port 1 and 3).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by using bandpass filter in transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

Regarding to claim 8, Gerstel and Kai et al. disclose everything claimed as applied above (see claim 1). However, they fail to disclose the multiplex/demultiplex has optical filter and its function.

Kubo discloses that wherein each of said first and second wavelength multiplex/demultiplex unit (an optical multiplexer and demultiplexer-see column 5, line 63-64) further comprises an optical filter (bandpass filter-see column6, line 5) through which separation or insertion of a signal for maintenance control is performed (see column 5,lines 62 through column 6 lines 1-23 where in the optical filter can use as both multiplexer and demultiplexer's function and it includes the separation and insertion loss characteristic between lots of bandpass filters.)

Therefore it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Gerstel and Kai et al.'s invention by adding up the optical filter into transmission system for reducing transmission error because it would allow to contribute to the improvement in transmission quality between optical transmission device and optical filter.

Citation of Pertinent Prior Art

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Liu et al. (US Patent Number 6546166) discloses the multiplexer/demultiplexer transmission device has optical filter for reducing channel distortion and better transmission system.

Farries et al. (EP 1109342) teach the optical multiplexing/demultiplexing device have plurality of bandpass filters which can separate a sub-signal from the multiplexed optical signal for reliable transmission system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHYOWAI LIN whose telephone number is (571) 270-1659. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo R. Feliciano can be reached on (571) 272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PWL

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